Dublin Institute of Technology
ARROW@DIT

Conference papers

Graduate Business School

2010-09-01

An Investigation into the Stickiness of Tacit Knowledge Transfer

Alison Murray
Dublin Institute of Technology

Philomena Hanlon
Dublin Institute of Technology, phil.hanlon@dit.ie

Follow this and additional works at: http://arrow.dit.ie/buschgracon

Part of the Business Administration, Management, and Operations Commons

Recommended Citation

Murray, A., Hanlon, P.:An Investigation into the Stickiness of Tacit Knowledge Transfer. 13th. Annual Conference of the Irish Academy of Management, Cork Institute of Technology, 1-3 September, 2010.

This Conference Paper is brought to you for free and open access by the Graduate Business School at ARROW@DIT. It has been accepted for inclusion in Conference papers by an authorized administrator of ARROW@DIT. For more information, please contact yvonne.desmond@dit.ie, arrow.admin@dit.ie.

This work is licensed under a Creative Commons Attribution-Noncommercial-Share Alike 3.0 License

PDF-XChange
Click to buy NOW!
www.docu-track.com

PDF-XChange
Click to buy NOW!
www.docu-track.com

IRISH ACADEMY
OF MANAGEMENT

13th Annual Conference of the Irish Academy of Management,

Cork Institute of Technology
1st – 3rd September 2010

An Investigation into the 'Stickiness' of Tacit Knowledge Transfer

Competitive paper

Ms. Alison Murray
Tel: 086 8710729
Email alisonmurray86@gmail.com

Dr. Phil Hanlon
Tel: 01 402 3128
Email: phil.hanlon@dit.ie

College of Business
Dublin Institute of Technology
Aungier Street
Dublin 2

PDF-XChange Click to buy NOW! www.docu-track.com
PDF-XChange Click to buy NOW! www.docu-track.com

An Investigation into the '*Stickiness*' of Tacit Knowledge Transfer

Key words: Tacit, Knowledge Transfer, Stickiness

Abstract

Managing knowledge is of central importance to organisational success, (Chia, 2003). The focus of knowledge management systems has progressed from the management of explicit knowledge to tacit knowledge. The importance of tacit knowledge is highlighted by Wah (1999:27) who argues that 90% of the knowledge in any organisation is embedded and synthesised in people's minds.

However, tacit knowledge is the specific type of knowledge that is characterized as extremely difficult to capture or articulate, (Nonaka, 1994). Academics and practitioners alike have gained an appreciation for this type of knowledge. Tacit knowledge has become recognised as a significant and advantageous part of the knowledge base of both individuals and organisations. However, in order for organisations to take full advantage of their current tacit knowledge base they must encourage individuals to both capture and transfer it.

This paper addresses the difficulties associated with the capture and transfer of tacit knowledge. Szulanski (2000), identified a concept he called 'stickiness' to describe the difficulty of this process. It is generally assumed that tacit knowledge is both costly and time-consuming to transfer (Szulanski, 1995). It has been shown however, that tacit knowledge is transferred on a regular basis within organisations, sometimes with great difficulty and sometimes with ease. In order to assist both individuals and organizations in their attempt to transfer tacit knowledge we must first identify the obstacles that stand in their way. Szulanski (2000) discussed eight areas of difficulty which are experienced

PDF-XChange Click to buy NOW! www.docu-track.com
PDF-XChange Click to buy NOW! www.docu-track.com

during a knowledge transfer. He categorises them into two separate areas of the transfer, namely knowledge characteristics and situational characteristics, with four difficulties identified within each. This paper uses these eight areas of difficulty as the bounds within which to test the 'stickiness' of tacit knowledge transfer.

This paper conducts a systematic empirical investigation into the 'stickiness' of tacit knowledge transfer through qualitative semi-structured interviews and an in-depth literature review. The semi-structured interviews consist of a detailed examination of tacit knowledge transfers among IT support professionals and both integration and software engineers. The interviewees were asked to discuss in detail times when they were involved in a transfer of tacit knowledge, and were then probed for further information on the difficulties they experienced and the obstacles they encountered.

Analysis of the interview transcripts shows a vast difference in the spread and significance of difficulties experienced during the transfer of tacit knowledge compared to that of knowledge in general. However, it is important to note that Szulanski's eight areas of difficulty are a sufficient basis upon which to study tacit knowledge transfer. Three areas of difference stood out, firstly the influence of the source on the transfer of tacit knowledge is significantly stronger than that of knowledge in general, secondly the reasons for transferring incomplete knowledge varied greatly from that discussed by Szulanski, and finally the effect of organisation and industry culture on the likelihood of tacit knowledge transfer is considerably higher. Being aware of the difficulties that emerge during a tacit knowledge transfer allows those engaging in it to reduce these difficulties and to seek solutions to them.

PDF-XChange Click to buy NOW! www.docu-track.com
PDF-XChange Click to buy NOW! www.docu-track.com

1. Introduction

This paper looks specifically at the difficulties that may be encountered in the transfer of tacit knowledge within organisations. Drawing on the work of Szulanski (1993, 1995, 1996 and 2000) an empirical investigation was conducted into the transfer of tacit knowledge within the Information Technology (I.T.) industry. Szulanski's model was selected because, unlike Nonaka's (1994) model which takes an organisational perspective, the former takes an individual perspective.

2. Literature Review

2.1 Introduction

It is regularly said that we live in a knowledge based economy and that knowledge and information are critical to economic development. It is widely accepted that the higher levels of knowledge an organisation acquires the better it is for their performance. When looking at knowledge from a knowledge management point of view one must move away from the philosophical view of knowledge to a more practical one. Davenport and Prusak (in Tsoukas and Vladimirou, 2001:974) give a detailed definition of knowledge within the context of knowledge management:

> *Knowledge is a flux mix of framed experiences, values, contextual information and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers. In organisations it often becomes embedded not only in documents and reports but also in organisational routines, processes, practices and norms.*

This definition captures the complexity of knowledge and the wide variety of areas it can be used to benefit an organisation. This definition separates the areas in which knowledge becomes 'embedded' into explicit and tacit. Further exploration of explicit and tacit knowledge is presented in the next section.

PDF-XChange Click to buy NOW! www.docu-track.com
PDF-XChange Click to buy NOW! www.docu-track.com

2.2 Tacit Knowledge

Literature has made a clear distinction between explicit and tacit knowledge. Nonaka (1994) states that explicit knowledge is knowledge which can be easily articulated, explained and understood. Explicit knowledge comes in a number of forms, for example books, manuals and documents. Once codified, explicit knowledge can be stored and thus stays with the organisation even when the authors have departed (Choo, 1998).

Tacit knowledge on the other hand is difficult to articulate, is usually learnt over time and consists of experience and intuition. Nonaka (1994:16) states that tacit knowledge "*is deeply rooted in action, commitment, and involvement in a specific context*" and that it "*is not transmittable into formal language*". Polanyi (1967:4) stated it more simply saying that "*we know more than we can tell*".

This paper focuses on tacit knowledge. As such it is important to look deeper into the specifics of it. Many authors discuss two facets of tacit knowledge, implicit and tacit; while others combine these two into one and refer to them as one entity, namely tacit knowledge. The major difference between these two points of view lies in their definition of tacit knowledge.

Brokel and Binder (2007) state that one definition is strict, while the other is loose. The strict definitions state a difference between tacit and implicit knowledge, whereas the loose definition combines the two under the one name, tacit knowledge. Figure 1 expresses the difference between the strict and loose definitions of tacit knowledge as a linear continuum from strict to loose levels of tacitness.

PDF-XChange Click to buy NOW! www.docu-track.com
PDF-XChange Click to buy NOW! www.docu-track.com

Degree of 'Tacitness'

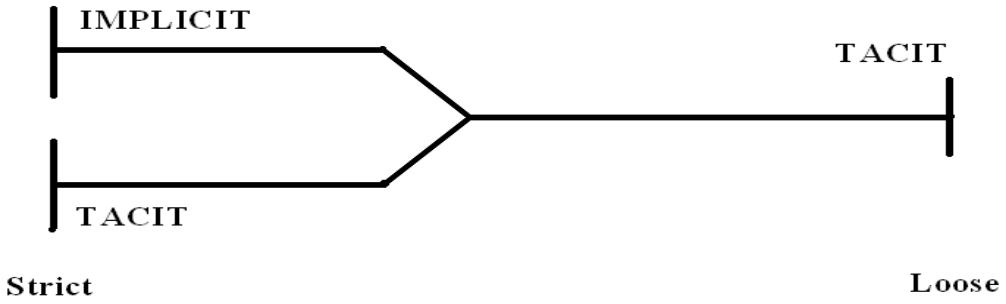

Figure 1: Tacit Knowledge Spectrum (adapted from Brokel and Binder, 2007)

The strict definition recognises that the difference between implicit and tacit knowledge in that tacit knowledge is defined as personal, intuitive knowledge not accessible to conscious knowledge and which cannot be articulated or codified and cannot be explicated fully even by an expert. It can, however be transferred from one person to another but only through a long process.

Again according to the strict definition, implicit knowledge is that which is currently tacit but that can be articulated, codified and explicated, (Nonaka and Takeuchi, 1995).

For the purpose of this paper the loose definition, tacit and implicit knowledge combined will be referred to as 'tacit knowledge' and the strict definitions, of tacit and implicit knowledge separately will be referred to as *'pure' tacit* and *tacit explicit* knowledge. The **strict definition** of distinguishing between tacit, *pure tacit* and implicit, *tacit explicit* knowledge will be adopted throughout this paper. The distinctions between the three terms and their definitions are shown in table 1.

PDF-XChange Click to buy NOW! www.docu-track.com
PDF-XChange Click to buy NOW! www.docu-track.com

Type of Tacit Knowledge	Knowledge Title	Definition
Loose Definition		
Tacit	Tacit Knowledge	Combines both 'pure' tacit and tacit explicit under the one name, Tacit Knowledge.
Strict Definition		
Tacit	'Pure' Tacit Knowledge	Is that which cannot be codified, articulated or explicated
Implicit	Tacit Explicit Knowledge	Is that which is currently tacit but that can be explicitated

Table 1: Strict and Loose Tacit Knowledge Definitions (adapted from Brokel and Binder, 2007)

2.3 Why transfer Tacit Knowledge?

The transfer of tacit knowledge has become increasingly popular due to the fact that, through its continuous transfer, knowledge will become embedded into the practices and processes of the organisation. The transfer of tacit knowledge assists organisations in changing with the environment but also helps to improve, among other things their innovation capacity, knowledge creation and new product development (Madhavan and Grover, 1998). The benefits of tacit knowledge transfer are wide reaching and extremely beneficial to the organization. The successful transfer of tacit knowledge has numerous advantages to both the individual and the organization. The benefits, fully outlined elsewhere include improved competitive advantage; improved decision making; cost advantages (Murray, 2007); and benefits regarding training and development (Muscatello, 2003). Due to space limitations these are not explored in this paper.

2.4 Models for the Transfer of Tacit Knowledge

When thinking about how to transfer knowledge many authors first thought is to use technology. The main problem with the use of I.T. is that in order to transfer

PDF-XChange Click to buy NOW! www.docu-track.com
PDF-XChange Click to buy NOW! www.docu-track.com

knowledge through technology you must first capture it. For tacit knowledge this poses extreme difficulty. The difficulties faced when transferring tacit knowledge are far more complex than those of explicit or implicit knowledge. Tacit knowledge is thus, somewhat neglected by I.T. based systems. Perry (2005) stated that there is an overreliance on the I.T. Knowledge Management system.

Tacit knowledge needs to be dealt with differently than that of explicit or implicit knowledge and its transfer needs to be examined in a different way. The following knowledge transfers models are not I.T. based and as such are more suitable when looking at tacit knowledge. This section of the paper will examine three such models put forward by Nonaka (1994), Brock and Yaniv (2007) and Szulanski (2000), with specific attention to their handling of the transfer of tacit knowledge.

2.3.1 Nonaka (1994)

Ikujiro Nonaka is one of the most highly regarded authors in the knowledge management field. In his 1994 paper "*A Dynamic Theory of Organisational Knowledge Creation*" he puts forward a model (see figure 2) which outlines the process by which knowledge is shared and created within an organisation.

In this model he states that the process of knowledge creation is completed through the cyclical conversion of tacit and explicit knowledge in four distinct modes, socialisation, externalisation, combination and internalisation. Figure 2 shows a process which moves from mode to mode in an ordered manner. Nonaka and Takeuchi (1995:71) describes the model as a "*knowledge spiral*" which over time will allow an organisation to improve their knowledge assets significantly.

PDF-XChange Click to buy NOW! www.docu-track.com
PDF-XChange Click to buy NOW! www.docu-track.com

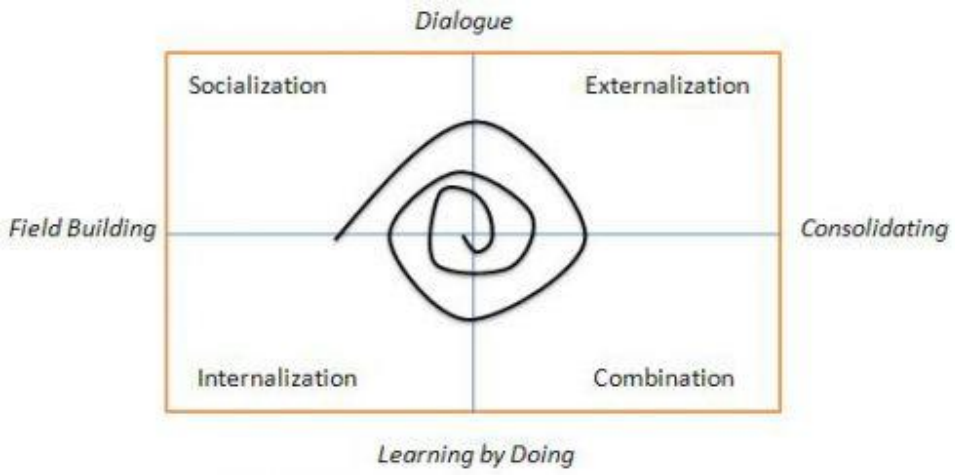

Figure 2: Knowledge Spiral (Nonaka & Takeuchi, 1995:71)

Figure 2 shows that each mode in the process entails a conversion *from* either tacit or explicit knowledge *to* either tacit or explicit knowledge. Table 2 shows the four modes and the type of knowledge each mode converts from and to.

Mode	**Conversion of Knowledge**	
	From	**To**
Socialisation	Tacit	Tacit
Externalisation	Tacit	Explicit
Combination	Explicit	Explicit
Internalisation	Explicit	Tacit

Table 2: Modes of knowledge conversion (adapted from Nonaka & Takeuchi, 1995)

While Nonaka and Takeuchi's Knowledge Spiral (figure 2), is the basis of much literature surrounding the transfer of knowledge it is too broad for the specific examination of the transfer of tacit knowledge between individuals. The transfer of tacit knowledge is but one aspect of the knowledge creation process. Only one of the four modes i.e., socialisation, examines the transfer of tacit knowledge and thus a more detailed model is required.

PDF-XChange Click to buy NOW! www.docu-track.com
PDF-XChange Click to buy NOW! www.docu-track.com

2.3.2 Brock and Yaniv (2007)

Brock and Yaniv (2007:832) created a model to explain the importance of '*organisational attention*' on knowledge in order for replication strategies to become successful. They argue that it is the organisations attention to different sources of knowledge; outlets, competitors, customers, existing knowledge and so forth that allows them to acquire and integrate new and existing knowledge across the organisation. They state that the knowledge flow structure directly reflects '*organisational tacit knowledge'*, and is "*one of the manifestations of this kind of knowledge*" (pg 834). Tacit knowledge becomes embedded into the routines and processes of the organisation. The knowledge flow structure is the way in which knowledge is transferred throughout an organisation. Brook and Yaniv outline a cyclical model of organisational attention, see Figure 3.

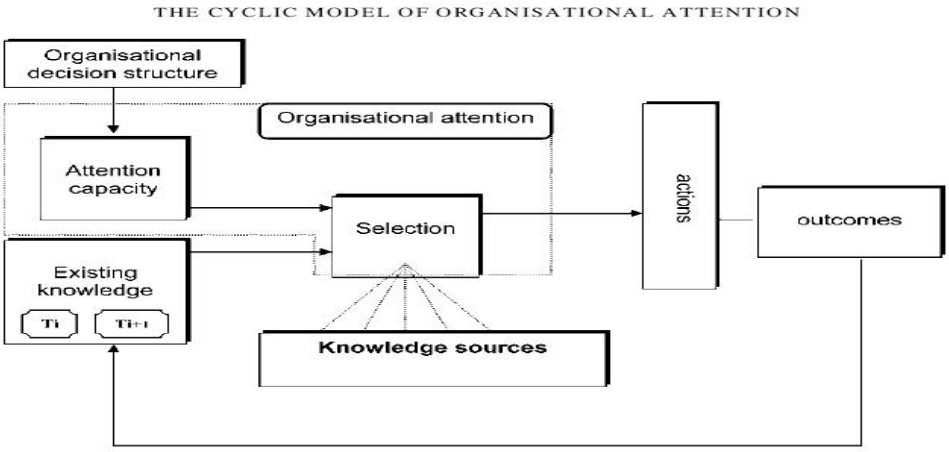

Figure 3: Cyclic Model of organisational attention (Brock and Yaniv, 2007:838)

This model focuses more on the tacit elements of knowledge than the explicit, however as it takes an organisation wide perspective it is not suitable for the sole examination of the transfer of tacit knowledge on an individual level. The final model to

be looked at is Szulanski's 2000 model which is discussed in detail in the following section of this paper.

3. Szulanski (2000)

Gabriel Szulanski (2000) produced a four stage model of the knowledge transfer process. This process looks at the transfer of an individual piece of knowledge. Although this model is focused on knowledge in general it does allow for and incorporate tacit knowledge. Figure 4 shows the four stages of a knowledge transfer together with the associated milestones.

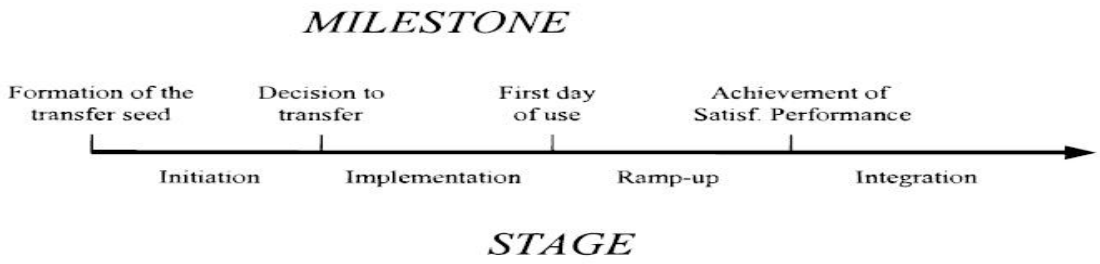

Figure 4: The process of knowledge transfer (Szulanski 2000:13)

This model describes the transfer of an individual piece of knowledge. Szulanski not only outlines the four stages of the transfer process but more importantly discusses the *"stickiness"* or difficulty of the knowledge transfer process during each stage.

Prior to his 2000 work Szulanski wrote numerous papers regarding the transfer of best practice within organisations. In his 1993 paper "*Intra-firm transfer of Best Practice, Appropriative Capabilities and Organisational Barriers to Appropriation*" Szulanski discussed the sources of difficulty during the transfer process. He outlined four elements, the source, the recipient, the practice and the organisation, which might cause difficulty during the transfer. He proceeds to discuss causal ambiguity and its affects on the transfer

PDF-XChange Click to buy NOW! www.docu-track.com
PDF-XChange Click to buy NOW! www.docu-track.com

of knowledge. Causal ambiguity is a major component in the transfer of knowledge and will be discussed later in Section 4.1.

He followed this paper with another in 1995, "*Unpacking stickiness: an empirical investigation of the barriers to transfer of best practice inside the firm*". This paper delved deeper into the difficulties surrounding the transfer of best practice and knowledge. He distinguished between the characteristics of knowledge and those of the situation. Both categories have a number of difficulties associated with them which act as barriers to transfer. He found that these barriers significantly affect the ease with which a transfer can take place.

Szulanski went on to write a further paper in 1996, called "*Exploring Internal Stickiness: Impediments to the Transfer of Best Practice Within the Firm*". This paper sets out the four stages of a transfer process. The four stages, discussed in the 1996 paper along with the difficulties discussed in the 1995 and 1993 papers are the basis upon which his 2000 model was created.

It is this model and more specifically the difficulties associated with the transfer of knowledge that this paper has used as the bounds within which to examine the '*stickiness*' of tacit knowledge transfer.

Szulanski's model is, in the researchers opinion the most viable when analysing the transfer of tacit knowledge. Its focus on the difficulty of knowledge transfer is but one of a number of reasons that this model was chosen for this research. These reasons are outlined below (Figure 5).

PDF-XChange Click to buy NOW! www.docu-track.com
PDF-XChange Click to buy NOW! www.docu-track.com

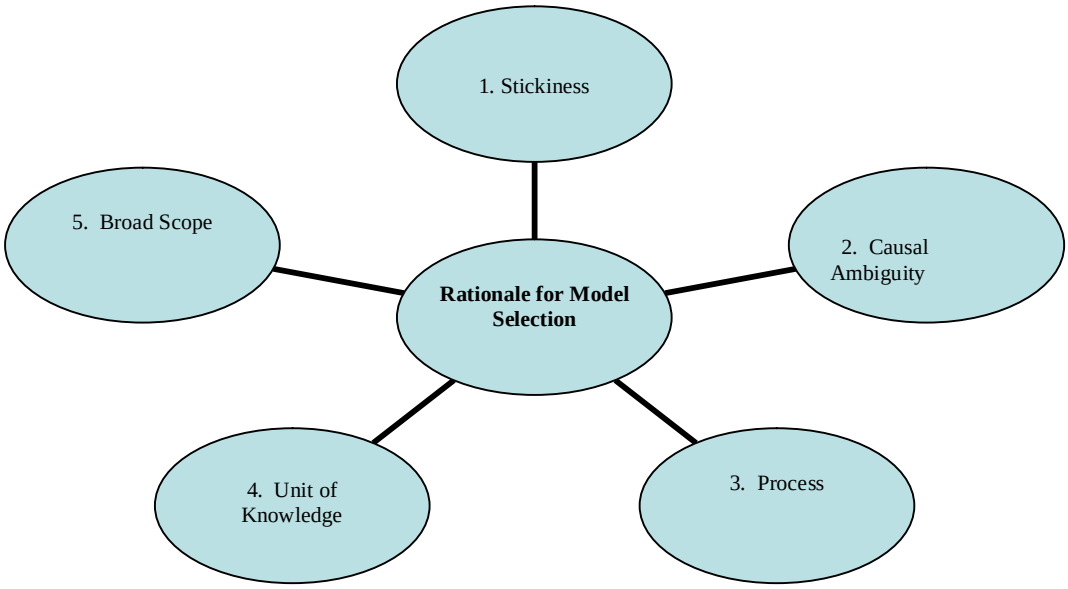

Figure 5: Rationale for Model Selection (developed by authors)

(1) This model (figure 5) focuses primarily on the stickiness of the transfer process. Szulanski (1995:437) defines stickiness *as "the difficulty to transfer knowledge"*. He focuses on the difficulties that arise when transferring knowledge. These difficulties emerge either due to the characteristics of the knowledge being transferred or to the characteristics of the situation in which the transfer is taking place.

(2) Causal ambiguity is tightly linked with tacit knowledge. Szulanski looks at this topic in detail in previous work (Szulanski, 1993) and brings his knowledge of the topic to the fore with this model. Causal Ambiguity is defined by Lippman and Rumelt (in Szulanski, 1996:30) as "*When the precise reasons for success or failure in replicating a capability in new setting cannot be determined even ex post*". Tacit knowledge is by its very nature causally ambiguous. This model takes tacit knowledge into consideration but does not focus solely on it. It does however have the basis on which one can look more in

PDF-XChange Click to buy NOW! www.docu-track.com
PDF-XChange Click to buy NOW! www.docu-track.com

depth at the causally ambiguous nature of tacit knowledge and how that affects its transfer.

(3) Szulanski looks at the transfer of knowledge as a process not an act. This allows him to look at each stage of the transfer process separately. The fact that it is a process will allow one to look at the transfer of tacit knowledge in detail. Each stage of the process has separate events and difficulties which affect the success of the transfer in various ways.

(4) Authors such as Nonaka (1994) and Brock and Yaniv (2007) examine the transfer of knowledge, both explicit and tacit. However their research is focused at an organisational level. In order to investigate the specific problems associated with the transfer of tacit knowledge one must begin at a micro level and build to the macro level. Szulanski however examines the transfer of knowledge at an individual level, investigating the process by which one unit of knowledge is transferred.

(5) This model is neither organisationally nor industrially specific. It is universal and thus can be applied to any industry, organisation or situation where the transfer of knowledge takes place.

4. Difficulty of Transferring Tacit Knowledge

There are many factors that affect the transfer of tacit knowledge; these factors are in two categories, Knowledge characteristics and Situational characteristics. This section of the paper will discuss these factors and how they affect the specific area of the transfer of tacit knowledge.

PDF-XChange Click to buy NOW! www.docu-track.com
PDF-XChange Click to buy NOW! www.docu-track.com

4.1 Knowledge Characteristics

Causal Ambiguity

In order to begin, the underlying characteristics of tacit knowledge must be analysed, expressly that of causal ambiguity and its affects on the transfer of tacit knowledge.

Causal Ambiguity is explained by Rumelt (in Lamb, 1984:562) as:

> *... if the precise reasons for success or failure cannot be determined, even after the event has occurred, there is causal ambiguity and it is impossible to produce an unambiguous list of the factors of production, much less measure their marginal contribution.*

Causal ambiguity is an important factor in the transfer of tacit knowledge as it is a characteristic of tacit knowledge itself. Tacit knowledge is ambiguous by its very nature and thus the process of its transfer is certain to be complicated by ambiguity. Szulanski (1996) looks deeper into the concept of causal ambiguity and unfolds four underlying factors, as shown in Figure 6.

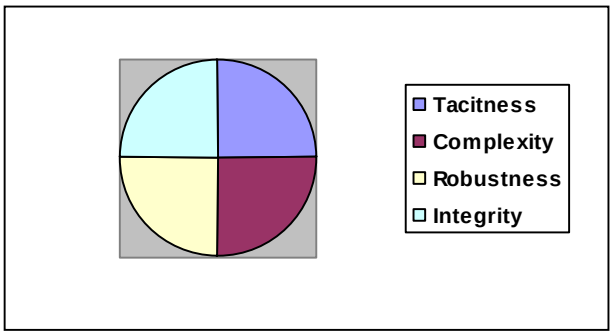

Figure 6: Knowledge Characteristics (adapted from Szulanski, 1996)

4.1.1 Tacitness

When looking at knowledge as a whole Szulanski (1993) states that ambiguity will increase along with an increase in the level of tacitness. When examining the transfer of knowledge it is necessary to assess its tacitness. However we are examining tacit

PDF-XChange Click to buy NOW! www.docu-track.com
PDF-XChange Click to buy NOW! www.docu-track.com

knowledge which is, by name and nature, tacit and is therefore highly ambiguous and will be difficult to transfer.

4.1.2 Complexity

The complexity of the knowledge to be transferred is determined by the recipient's perception of that knowledge and their ability to understand and adopt it. There can be a number of factors which affect the individual's perception of complexity the most significant of which is how it compares to existing knowledge (Tyre, 1991).

4.1.3 Robustness

Knowledge is robust when it is insensitive to variations in the environment (Szulanski, 1993). Tacit knowledge is however, built up over time through experience with a particular process. The process becomes embedded into the mind and is tweaked in the mind of its owner. This is due to experience and an in-depth understanding of the process and is often unexplainable by the individual. We can thus assume that the source will tweak and change their current knowledge to suit both the recipient and situation.

4.1.4 Integrity

If a transfer has integrity then it is whole, complete and cohesive. If parts are left out of the transfer then the transfer as a whole will not be successful. Often in the transfer of tacit knowledge the recipient is required to accumulate further new information, knowledge or resources in order to complete the transfer. This results in a low level of integrity of tacit knowledge

These four factors have a significant affect on the level of causal ambiguity but in very different ways. Table 3 shows the four factors, the level of these factors in regards to tacit knowledge and their affect on the causal ambiguity of tacit knowledge.

PDF-XChange Click to buy NOW! www.docu-track.com
PDF-XChange Click to buy NOW! www.docu-track.com

Factor	Level	Effect on Causal Ambiguity
Tacitness	High	Increase
Complexity	High	Increase
Robustness	High	Decrease
Integrity	Low	Increase

Table 3: Factors affect on Causal Ambiguity (adapted from Szulanski, 1996)

It is clear from the above diagram that there is a high level of causal ambiguity surrounding tacit knowledge. This high level of causal ambiguity increases the difficulty of its transfer. Tacit knowledge is by its very nature complex thus it is unsurprising that its transfer is equally complex.

4.2 Situation Characteristics

There are four aspects which affect the transfer situation, the Source, the Recipient, the Practice being transferred and the Organisational Context in which it all takes place (figure 7 next).

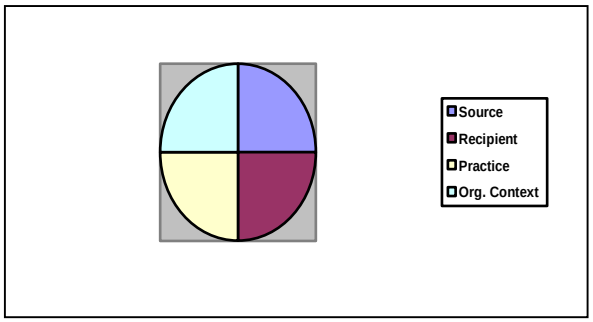

Figure 7: Situational Characteristics (adapted from Szulanski, 1996)

The relationship between the source and the recipient is also a significant factor which will be examined in this section of the paper.

PDF-XChange Click to buy NOW! www.docu-track.com
PDF-XChange Click to buy NOW! www.docu-track.com

4.2.1 Source

The source of the knowledge is the initiating entity of the process. Their motivations to transfer are vital to its success. If the motivations of the source are not true to the transfer they often purposefully omit vital information. According to Szulanski (1996:31) the source may lack the motivation to transfer due to *inter alia "fear of losing ownership, (or) a position of privilege*." The second aspect of the source that affects the transfer is their perceived reliability (Arrow *in* Szulanski, 1996:31). The more reliable, credible and trustworthy the source the more likely recipients are to engage in knowledge transfers with them. The final aspect of the source is how complete their knowledge is. It often occurs that the recipient requires additional resources in order to complete the transfer.

4.2.2. Recipient

As with the source, the motivation of the recipient is vital to the success of the transfer. If the recipient is not motivated to engage in the transfer process they can, in a number of ways either subtly or out-rightly reject the new knowledge. The absorptive and retentive capacity of the recipient is however the most significant barriers to knowledge transfer. The recipient many not have the technical competence or the resources necessary to absorb, (Cohen and Levinthal, 1990). If the recipient cannot take in the knowledge, the transfer will not be successful. Retentive capacity signifies the recipient's ability to sustain, routinise and institutionalise the new knowledge (Cohen and Levinthal, 1990).

PDF-XChange Click to buy NOW! www.docu-track.com
PDF-XChange Click to buy NOW! www.docu-track.com

4.2.3 Relationship

Not only are the source and recipient individually responsible to the success of the transfer but so too is their relationship. Gluckler (2007) states that the source and recipient must have close ties and a high level of trust. He states that the source will only divulge their knowledge to those they deem worthy.

4.2.4 Practice

The practice is the data, information or knowledge that is being transferred. The practice in this paper is tacit knowledge. Section 2.2 of this paper discussed the characteristics of tacit knowledge and how they affect the transfer process.

4.2.5 Organisational Context

There is a general belief that the transfer of tacit knowledge is "*essentially costless and instantaneous*" (Szulanski, 2000:9). However, it is often laborious, time consuming and difficult. The organisational context will affect the perceived benefits and the costs involved in the transfer process. Szulanski (1993) stated that the particular facets of the organisational context which increase the benefits or reduces the costs of a transfer of best practice are collectively labelled transfer opportunity. The transfer opportunity concept not only applies to the transfer of best practice but to all transfers including that of tacit knowledge. Transfer opportunity includes the organisational views, its structure and set-up. All of these factors affect the transfer opportunity of the organisation. There is also a geographic dimension to the transfer of tacit knowledge. Brokel and Binder (2007:153) report that some research has found that geography and the spatial dimension of the source and receiver has a significant effect on the transfer of tacit knowledge. They discuss the fact that people have a bias over how and where they will transfer knowledge, especially tacit knowledge. They argue that tacit knowledge is

PDF-XChange Click to buy NOW! www.docu-track.com
PDF-XChange Click to buy NOW! www.docu-track.com

spatially bounded – that is, tacit knowledge can only be transferred face to face thus the geographic reach of such knowledge is limited. Sturgeon et al., (2008) discuss how the improvements in organizational communication technology would appear to diminish this complication of the transfer of tacit knowledge.

5. Methodology

This section provides an overview of the research methodology chosen for this research. Given the subjective nature of tacit knowledge the primary research conducted is qualitative, inductive and of a phenomenological nature. The I.T. industry was selected for study due to the level of tacit knowledge necessitated by it. The constant development of new technology requires those in the I.T. industry to acquire new knowledge on a daily basis.

The company in which the research takes place is a leading I.T. service provider in Ireland. With over 30 years in business they continue to provide their customers with desktop and field support services at a high level. See Appendix 1 for criteria used for the selection of interviewees. Of the four interviewees selected two are field engineers, one is a service desk supervisor and one a systems administrator.

Interviewee 1 has worked with the company in question for ten years with a total of fifteen years industry experience. At the time of interview he was a field engineer specialising in server hardware. Interviewee 2 had eight years experience and had been with the company only two years. She was the service desk supervisor and worked closely with a team of eleven service desk operators. Interviewee 3, a field engineer, had ten years industry experience and had been with the company for six. He specialised in printer, fax and photocopier hardware. Interviewee 4 was a systems administrator for the

PDF-XChange Click to buy NOW! www.docu-track.com
PDF-XChange Click to buy NOW! www.docu-track.com

company in question and had been with the company for three years with a total of fourteen years industry experience. See Appendix 2 for interviewee theme sheet.

Each of the four interviewees was asked for one example of them transferring tacit knowledge to another and one example of them receiving tacit knowledge from another. Some interviewees provided more than one example of each.

The limitations of this research are acknowledged in terms of the small sample size and use of one company only within one sector. However the authors consider that the in-depth interviews undertaken add to the body of knowledge surrounding tacit knowledge transfer.

6. Findings and Analysis

6.1 Introduction

Detailed examination of the interview transcripts for evidence of the difficulties presented by Szulanski (2000) was conducted. This section will firstly depict the examples of tacit knowledge transfer discussed by the interviewees in Table 4. This is followed by the results of the analysis of the interview data for evidence of the factors impacting on tacit knowledge transfer as identified by Szulanski in Table 5.

Following on from the interview data a discussion of the difficulties expressed by the interviewees is provided. This is separated into two sections. Firstly the interview data relating to Szulanski's (2000) model is discussed in detail and secondly discussions of the main findings of the research are detailed.

PDF-XChange Click to buy NOW! www.docu-track.com
PDF-XChange Click to buy NOW! www.docu-track.com

6.2 Interview Data

The interview process yielded fifteen examples of tacit knowledge transfer. Table 4 provides a brief description of them, along with the interviewee and the specific type of knowledge that was transferred within each. The types of knowledge were decided upon by the researchers based upon the definitions as discussed in section 2.2 of this paper.

Example No.	Interviewee	Brief description of Transfer	Type of Knowledge
1	1	Fault in the imaging of the PC	Tacit Explicit
2	1	Reconfiguration of disks	Pure Tacit
3	1	Printer part replacement process	Tacit Explicit
4	1	Drive cage set-up	Pure Tacit
5	1	Building of a server	Tacit Explicit
6	2	Diagnosis of faulty PC	Pure Tacit
7	2	Team break times	Tacit Explicit
8	2	Faulty email, pop3 account	Pure Tacit
9	3	Double error on printer	Pure Tacit
10	3	Building a server	Tacit Explicit
11	3	Solving a hard drive issue	Pure Tacit
12	4	Software install process	Tacit Explicit
13	4	Harddrive to USB connecter cable	Tacit Explicit
14	4	Upgraded software package	Pure Tacit
15	4	Faulty storage system	Pure Tacit

Table 4: Examples of Tacit Knowledge Transfer

PDF-XChange Click to buy NOW! www.docu-track.com
PDF-XChange Click to buy NOW! www.docu-track.com

Table 5 below shows the difficulties expressed by Szulanski (2000) and the number of times the interviewees mentioned that difficulty in relation to the transfer of 'pure' tacit knowledge.

Difficulty	**Number of times encountered**
Knowledge Characteristics	
Tacitness	11
Complexity	3
Robustness	1
Integrity	4
Situational Characteristics	
Source	8
Recipient	6
Relationship	5
Organisational Context	0

Table 5: Difficulties expressed during the transfer of pure tacit knowledge

6.3 Interview Findings in relation to Szulanski Model (2000)

Each of the difficulties identified in table 5 (above) will now be assessed in detail and the specific aspects of that difficulty which was experienced by the interviewee will be examined. It will begin with the knowledge characteristics and continue on to discuss the situational characteristics.

6.3.1 Knowledge Characteristics

Tacitness

The ease with which an individual can articulate their knowledge is referred to as its tacitness. A number of the interviewees referred to the difficulty of explaining their knowledge to a colleague. Interviewee one, stated their frustration in attempting to explain their knowledge by saying "*It's terrible not being able to explain but you just*

PDF-XChange Click to buy NOW! www.docu-track.com
PDF-XChange Click to buy NOW! www.docu-track.com

can't". They each in their own way expressed that the act of explicating tacit knowledge is time consuming, frustrating and often just not possible.

Complexity

The complexity of the knowledge is determined by the recipient's perception of that knowledge and their ability to understand and adopt it. Throughout the interviews the recipient's perception of complexity varied greatly. As the interviewees are both knowledgeable and experienced in their field they found it far easier to transfer their knowledge to their peers compared to others in the industry and end users. They noted others inability to understand the knowledge and their lack of need for the knowledge as barriers. It is for these reasons that they would abandon their attempts to transfer their knowledge to these individuals.

Robustness

The robustness of the knowledge equates to its insensitivity to variations in the environment (Szulanski, 1993). This means that individuals will tweak and adapt their knowledge in order to fit a particular situation. Interviewee three mentioned the use of his tacit knowledge in different situations, he stated that he would "*try what he knows*" in order to fix something. These examples suggest that when the interviewees encounter a problem they will use their current tacit knowledge, acquired over time in order to solve it. Their knowledge is thus robust and can be applied to a number of situations.

Integrity

The level of integrity of a knowledge transfer is dependent on it being whole, complete and cohesive. It is evident from the interviews that incomplete knowledge is transferred regularly, yet it does not always result in the failure of the transfer. The

PDF-XChange Click to buy NOW! www.docu-track.com
PDF-XChange Click to buy NOW! www.docu-track.com

reasons for incomplete transfer were due to the source, recipient and their relationship. The many reasons for incomplete knowledge transfer will be examined later.

6.3.2 Situational Characteristics

Source

The source of the knowledge is the individual, who has the knowledge and because they possess the knowledge they have the option to transfer or not to the recipient. The problems noted by the interviewees in relation to the source were the source's motivation to transfer, their perception of the recipients need and ability to understand and their own ability to explain their knowledge. Interviewee two stated that it is "*hard to explain…. it takes ages*". If they expect the transfer to take a long time they may simply abandon the process. A number of the interviewees stated that a primary reason they do not transfer their tacit knowledge is due to the fact that the recipient does not need and will not use the knowledge. Interviewee four clearly stated that he would not transfer his tacit knowledge because "*they don't need to know it*". It is clear that the source's motivation diminishes depending on their perception of the recipients need to acquire the knowledge.

The final difficulty regarding the source expressed by the interviewees was an inability to explain things effectively. Interviewee three expressed this by stating "*I'm not very good at explaining things*". His own inability to articulate his tacit knowledge has hindered him in transferring it.

Recipient

The recipient is the individual who is receiving new knowledge during the transfer. It was noted only once during the interviews that the motivation of the recipient

PDF-XChange Click to buy NOW! www.docu-track.com
PDF-XChange Click to buy NOW! www.docu-track.com

was considered a difficulty. Interviewee four stated that "*I wouldn't be eager to learn the stuff they do because I don't really need it*". This lack of motivation to learn and acquire new tacit knowledge would terminate the transfer process immediately. The absorptive capacity and retentive capacity of the recipient are considered the most significant barriers to knowledge transfer. However the interviewees portrayed a strong ability to acquire, use and re-use tacit knowledge. The most prominent difficulty relating to the recipient was the lack of relevant prior knowledge. Each and every one of the interviewees stated this as a significant difficulty. Interviewee three stated "*they wouldn't understand*", interviewee one went on to say that some people "*just can't get their head around it*". When the recipient does not have the capacity to understand the knowledge trying to be transferred, the transfer itself will undoubtedly be a failure.

Relationship

The relationship, i.e., the level of trust and respect between the source and the recipient has been noted as a vital factor in the success of a knowledge transfer (Gluckler, 2007). However, the main difficulty expressed by the interviewees in relation to the relationship between source and recipient was that they have a different perspective, a different way of looking at things. This can cause difficulties for the source in explaining the tacit knowledge and for the recipient in understanding it. This is a difficulty that all of the interviewees expressed, some more than once. They did however state that the more familiar they became with someone the easier it was to transfer tacit knowledge. This ease is not due to trust or respect but due to the familiarity each has with the others perspective or the way they look at things. Over time members of a team grow accustomed to the way in which the others explain and describe things allowing them to understand it.

PDF-XChange Click to buy NOW! www.docu-track.com
PDF-XChange Click to buy NOW! www.docu-track.com

6.4 Main Factors affecting Tacit Knowledge Transfer

Close examination of the interview data surfaced five intriguing elements regarding the difficulty of transferring tacit knowledge. These five areas are being examined further due to their relevance and note worthiness in relation to the transfer of tacit knowledge.

6.4.1 I.T. Industry

All of the interviewees work in I.T. and it is clear from the data that the industry itself had a significant effect on the transfer of tacit knowledge. Interviewee two stated that "*in order to work in this industry you have be able to ask people questions*". Due to the fact that there is an ever growing amount of technology it is impossible for someone to know everything, thus there is a constant need to learn from others. Interviewee four equated the constant learning in a technology based environment to a puzzle, stating that "*it's like a puzzle you've done a hundred times but they add a new bit every now and then*". The constant learning by each individual allows for vast amounts of knowledge to be transferred between individuals, be that explicit or tacit.

Another aspect of the technology based knowledge is that there is a vast difference between specialists and lay people. For this reason there is often extreme difficulty in transferring knowledge, especially tacit knowledge between these two groups. Due to the fact that I.T. knowledge is not common knowledge this group of specialists will find less people with the ability to absorb their knowledge during transfer.

The final notable aspect of the I.T. industry that affects the transfer process is the lack of explicating of knowledge. Interviewee three stated that "*I never write things down .... It's an I.T. thing*". The constant use of their knowledge increases their retentive capacity and

PDF-XChange Click to buy NOW! www.docu-track.com
PDF-XChange Click to buy NOW! www.docu-track.com

elevates their need to explicate their knowledge. Also, because so few explicate their knowledge each individual is forced to transfer their knowledge on a regular basis.

6.4.2 Incomplete Knowledge

The interviewees stated that the primary reason for transferring incomplete knowledge was due to the recipient's lack of need for it. Interviewee two stated that she transferred incomplete knowledge due to the recipient's lack of "*need*" for it and that they wouldn't "*ever use it again*". Interviewee four reinforces this point by stating that some people "*don't need to know it*". A second reason for transferring incomplete knowledge presented by the interviewees is time constraints. Many of the interviewees admitted to simplifying the knowledge in order to save time, and through simplifying the knowledge they would leave much of the information out. Interviewee three stated that he "*probably shouldn't (give incomplete information) but it's usually a waste of time*". The giving of incomplete knowledge was dependent on the sources perception of the recipient's need for the knowledge. If the source perceived the recipients need as low they simply would not transfer the knowledge. It was previously thought that the omission of knowledge was due to sophisticated passive resistance of the source towards the transfer, (Szulanski, 1996). This was not the case according to the interviewees.

6.4.3 Perspective

Within the relationship spectrum of the transfer process Szulanski expressed the trustworthiness of the source and recipient as a vital factor to the success of a transfer. Although there was evidence of trustworthiness being a factor in this research it was not mentioned as a defining one. The most prominent difficulty was the difference in people's perspective. People look at things in very different ways and it is this difference that hinders the transfer process. If two people think and view things in the same way it

PDF-XChange Click to buy NOW! www.docu-track.com
PDF-XChange Click to buy NOW! www.docu-track.com

will be easier for them to transfer their respective tacit knowledge. A number of the interviewees stated a difference in perspective as a significant difficulty. Interviewee three stated the difference in people's perspective on things as a difficulty when they stated "*everyone thinks differently, they all have a different way of doing things*" and that the difference causes difficulties when attempting to transfer tacit knowledge. Although this difficulty was noted by the interviewees they also expressed that it eased as the relationship with the recipient grew stronger. Interviewee four explained that as you get to know someone better you become accustomed to their perspective and learn how to "*communicate with them better and explain things in ways that they will understand*".

6.4.4 Organisational Context

The habitual nature in which the interviewees in this study transfer tacit knowledge suggests that it is embedded into the culture of the organisation. The fact that it is the I.T. industry may have a significant affect on this. However it was clear from the interviews that the presence of teams and the relatively small size of the organisation have a considerable affect on this culture of sharing tacit knowledge. Interviewee four stated that "*it (transferring tacit knowledge) is kind of the done thing…it is encouraged just not in a formal way*". It is clear that there is a culture of tacit knowledge transfer that the individuals involved may not have been aware of.

Of the four interviewees, two work in a team of three, one in a team of four and the last is a supervisor of a team of eleven. Interviewee four stated that "*because we work in a team we're constantly teaching and learning from each other*". Teamwork is something that has become commonplace within organisations and whether it is specified or not it significantly increases the transfer of tacit knowledge between the parties involved.

PDF-XChange Click to buy NOW! www.docu-track.com
PDF-XChange Click to buy NOW! www.docu-track.com

Each of the interviewees expressed a difference between the transfer of tacit knowledge between their team and other teams within the organisation. When asked if they transfer tacit knowledge with individuals outside their team interviewee four stated "*yeah, just not as much*", the reasons he gave were that there is less of a need due to the different knowledge needed or used by the different teams. The small, team orientated organisation significantly assists its members in transferring tacit knowledge.

6.4.5 Medium

The final element of interest that emerged during the interview process what medium used by the interviewees in order to transfer tacit knowledge. Brokel and Binder (2007) argue that individuals have a bias over where they will transfer tacit knowledge. They state that tacit knowledge can only be transferred face to face. The interviewees were each asked about the medium they used during the transfer of tacit knowledge. There was a difference of opinion on this topic between the four interviewees. Interviewees one, two and three clearly stated that they would use the phone or email for the transfer of tacit knowledge, whereas interviewee four stated that he believes that it is "*1,000 times easier face to face*". The regularity and comfort of use of different medium significantly affects the willingness and ability to transfer tacit knowledge through it. Also the interviewees all agreed that the type of knowledge being transferred too has an affect on its transferability in certain mediums.

PDF-XChange Click to buy NOW! www.docu-track.com
PDF-XChange Click to buy NOW! www.docu-track.com

7. Conclusion

The purpose of this paper was to examine the '*stickiness*' of tacit knowledge transfer. Through the use of Szulanski's 2000 model for the transfer of knowledge the difficulties associated with the transfer of tacit knowledge were examined. Szulanski described eight areas of difficulty and while these were found to exist as difficulties to some extent the specifics of these difficulties conveyed varied greatly from those discussed by Szulanski. These variances can be explained to a large extent by the fact that this paper focused on *tacit knowledge* whereas Szulanski focused on knowledge in general. The importance of some difficulties over others is clear in table 5. For example the tacitness of the knowledge was noted as a significant difficulty along with the strong influence of the source.

A number of other noteworthy aspects of the transfer of tacit knowledge emerged from the primary research. The first being the reasons behind transferring incomplete knowledge, the reasons discussed by the interviewees varied greatly from that of current literature. The second aspect of tacit knowledge transfer that emerged was that the medium used by the interviewees, varied depending on the type, tacitness and complexity of the knowledge being transferred. The third and final notable aspect of tacit knowledge transfer that surfaced was the affect of industry and organisational culture on the regularity of tacit knowledge transfer.

Limited research has been conducted in the area of the transfer of tacit knowledge. Conducting semi-structured interviews allowed deeper examination of those transferring tacit knowledge. Although the results were fruitful, the size and limitations of the research needs to be borne in mind.

PDF-XChange
Click to buy NOW!
www.docu-track.com
PDF-XChange
Click to buy NOW!
www.docu-track.com

Based on this research three avenues for future research are identified, The first is to consider the extent to which organisational culture can encourage the transfer of tacit knowledge. A second would entail the investigation of the motivations for transferring incomplete knowledge and a third is to identify the relevance of individuals differing perspectives on the transfer process.

PDF-XChange
Click to buy NOW!
www.docu-track.com

PDF-XChange
Click to buy NOW!
www.docu-track.com

Appendix 1

Criteria for Participant Selection

Minimum of 5 years experience working in the industry

Currently employed in the I.T. industry

Work as part of a team

Transfer knowledge within a team

Work alongside other teams

Transfer knowledge within their organisation

PDF-XChange Click to buy NOW! www.docu-track.com
PDF-XChange Click to buy NOW! www.docu-track.com

Appendix 2

Interview Theme Sheet - extract

Profile questions

Knowledge and Tacit Knowledge (Practice)

1. Can you describe a time when **you** shared some of your tacit knowledge with someone else?

2. Can you describe a time when **someone else** shared their tacit knowledge with you?

E.g., Someone was having difficulty diagnosing what was wrong with a computer, the symptom could be due to a wide variety of problems – yet you can immediately recognise which one of the many problems is causing the computer to fail. It is difficult for you to explain why you knew which of the causes to choose, you just knew.

(The examples do not have to be of a time when you could explain your knowledge; times when you couldn't explain are equally as relevant)

PDF-XChange Click to buy NOW! www.docu-track.com
PDF-XChange Click to buy NOW! www.docu-track.com

References

Brock, D., and Yaniv, E., (2007), Knowledge is not Enough: Organisational Attention and Replication Strategies, **Service Industries Journal**; Vol. 27, Issue 7, pp831-847

Brokel, T., and Binder, M., (2007), The Regional Dimension of Knowledge Transfers—A Behavioral Approach, **Industry and Innovation**, Vol. 14, Issue. 2, pp151–175

Chia R., (2003), From Knowledge-Creation to the Perfecting of Action: Tao, Basho and Pure Experience as the Ultimate Ground of Knowing, **Human Relations**, Vol. 56, Issue 8, pp953-981

Cohen W., and Levinthal D., (1990), Absorptive capacity: A new perspective on learning and innovation, **Administrative Science Quarterly**, Volume 35, Issue 1, pp 128-152

Choo C.W., (1998), **The Knowing Organization**, Oxford University Press

Gluckler J., (2007), Economic geography and the evolution of networks, **Journal of Economic Geography**, Volume 7, Issue 5, pp619-634.

Madhavan, R., and Grover, R., (1998), From Embedded Knowledge to Embodied Knowledge: New Product Development as Knowledge Management, **Journal of Marketing**, Vol. 62, Issue 4, pp1-12

Murray, S., (2007), Knowledge Type and Communication Media Choice in the Knowledge Transfer Process, **Journal of Managerial Issues** Vol. XIX, Issue 1 Spring, pp111-133

Muscatello . J., (2003), The potential use of knowledge management for training*:* A review and directions for future research, **Business Process Management Journal,** Vol. 9, Issue 3. pp382 - 394

Nonaka, I., (1994), A Dynamic Theory of Organizational Knowledge Creation, **Organization Science,** Vol. 5 Issue 1, pp14-37

Nonaka, I., and Takeuchi, H., (1995), **The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation**, Oxford University Press, New York

Perry. S., (2005), An investigation into knowledge management in customer and channel management, **DIT MSc in Strategic Management Dissertation**, unpublished.

PDF-XChange Click to buy NOW! www.docu-track.com
PDF-XChange Click to buy NOW! www.docu-track.com

Polanyi, M., (1967), **The Tacit Dimension**, Garden City, NY: Doubleday. Check year

Rumelt, R., (1984), Towards a Strategic Theory of the Firm, *in* R. Lamb (Eds.) **Competitive Strategic Management,** Englewood Cliffs, Prentice Hall.

Szulanski, G., (1993), Intra-firm Transfer of Best Practice, Appropriative Capabilities and Organisational Barriers to Appropriations, **Academy of Management Best Papers Proceedings**, pp47-51,

Szulanski, G., (1995), Unpacking Stickiness: An Empirical Investigation of the barriers to Transfer of Best Practice Inside the Firm, **Academy of Management Best Papers Proceedings,** pp437-441

Szulanski G., (1996), Exploring internal Stickiness: Impediments to the transfer of best practice within the firm, **Strategic Management Journal**, Vol. 17, pp27 - 43

Szulanski, G., (2000), The Process of Knowledge Transfer: A Diachronic Analysis of Stickiness. **Organizational Behavior & Human Decision Processes**, Vol. 82, Issue 1, pp9-27

Sturgeon, T., Van Biesebroeck J., and Gereffi G., (2008), Value Chains, networks and clusters: Refining the global automotive industry, **Journal of Economic Geography**, Volume 8, Issue 3, pp297 - 321

Tyre, M., (1991), Managing the introduction of new process technology*:* International differences in a multi-plant network, **Research Policy** Volume 20, pp57-76.

Tsoukas, H., and Vladimirou, E., (2001), What is Organisational Knowledge*?* **Journal of Management Studies**, Vol. 38, Issue 7, pp973-993

Wah L, (1999), Making Knowledge Stick, **Management Review,** Vol 88, Iss 6, May pp24-29